APPENDIX J

SUMMARY OF RISK ASSESSMENT RESULTS

TABLE J-1

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Current
Medium: Soils
Exposure Medium: Surface Soil/Sludge
Exposure Point: Lagoons (1 through 5) and Warehouse Area
Receptor Population: Trespasser
Receptor Age: Adolescent (ages 9-18)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	100	USEPA, 1997	50	USEPA, 1997	$\frac{CS \times IR \times FI \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction Ingested	unitless	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	60	Prof. Judgement	30	Prof. Judgement	
	ED	Exposure Duration	years	10	USEPA, 1997	5	USEPA, 1997	
	BW	Body Weight	kg	45	USEPA, 1997	45	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA, 1989	1,825	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15	CDI (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	4,700	USEPA, 2000	4,700	USEPA, 2000	$\frac{CS \times SA \times AF \times EF \times ED \times DAF \times CF}{BW \times AT}$
	AF	Skin Adherence Factor	mg/cm^2-day	0.23	USEPA, 2000	0.23	USEPA, 2000	
	EF	Exposure Frequency	days/year	60	Prof. Judgement	30	Prof. Judgement	
	ED	Exposure Duration	years	10	USEPA, 1997	5	USEPA, 1997	
	DAF	Dermal Absorption Factor	--	chemical specific	--	chemical specific	--	
	BW	Body Weight	kg	45	USEPA, 1997	45	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA, 1989	1,825	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	

TABLE J-2

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Current
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Lagoons (1 through 5)
Receptor Population: Trespasser
Receptor Age: Adolescent (ages 9-18)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Dermal	CW	Chemical Concentration in Water	µg/L	see Tables 3.11 to 3.14	see Tables 3.11 to 3.14	see Tables 3.11 to 3.14	see Tables 3.11 to 3.14	Organics:
	DA	Dose Absorbed per Unit Area per Event	mg/cm^2-event	see Attachment 4	USEPA, 1999a	see Attachment 4	USEPA, 1999a	Chronic Daily Intake (CDI) (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	4,700	USEPA, 2000	4,700	USEPA, 2000	
	PC	Permeability Constant	cm/hr	chemical specific	USEPA, 2000	chemical specific	USEPA, 2000	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$
	ET	Event Time	hrs/event	1	Prof. Judgement	0.5	Prof. Judgement	
	EV	Event Frequency	events/day	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	36	Prof. Judgement	24	Prof. Judgement	Inorganics:
	ED	Exposure Duration	years	10	USEPA, 1997	5	USEPA, 1997	CDI (mg/kg-day) =
	BW	Body Weight	kg	45	USEPA, 1997	45	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	$\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA, 1989	1,825	USEPA, 1989	
	CF1	Conversion Factor 1	L/cm^3	0.001	--	0.001	--	
	CF2	Conversion Factor 2	mg/µg	0.001	--	0.001	--	

TABLE J-3

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Soil/Sludge
Exposure Point: Lagoons (1 through 5) and Warehouse Area
Receptor Population: Park Visitor
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	100	USEPA, 1997	50	USEPA, 1997	$\frac{CS \times IR \times FI \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction Ingested	unitless	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	112	Prof. Judgement	56	Prof. Judgement	
	ED	Exposure Duration	years	24	USEPA, 1997	7	USEPA, 1997	
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	2,555	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	CDI (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	5,700	USEPA, 2000	5,700	USEPA, 2000	$\frac{CS \times SA \times AF \times EF \times ED \times DAF \times CF}{BW \times AT}$
	AF	Skin Adherence Factor	mg/cm^2-day	0.07	USEPA, 2000	0.07	USEPA, 2000	
	EF	Exposure Frequency	days/year	112	Prof. Judgement	56	Prof. Judgement	
	ED	Exposure Duration	years	24	USEPA, 1997	7	USEPA, 1997	
	DAF	Dermal Absorption Factor	--	chemical specific	--	chemical specific	--	
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	2,555	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	

TABLE J-4

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Lagoons (1 through 5)
Receptor Population: Park Visitor
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Dermal	CW	Chemical Concentration in Water	μg/L	see Tables 3.11 to 3.14	see Tables 3.11 to 3.14	see Tables 3.11 to 3.14	see Tables 3.11 to 3.14	Organics:
	DA	Dose Absorbed per Unit Area per Event	mg/cm^2-event	see Attachment 4	USEPA, 1999a	see Attachment 4	USEPA, 1999a	Chronic Daily Intake (CDI) (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	5,700	USEPA, 2000	5,700	USEPA, 2000	
	PC	Permeability Constant	cm/hr	chemical specific	USEPA, 2000	chemical specific	USEPA, 2000	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$
	ET	Event Time	hrs/event	1	Prof. Judgement	0.5	Prof. Judgement	
	EV	Event Frequency	events/day	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	60	Prof. Judgement	30	Prof. Judgement	Inorganics:
	ED	Exposure Duration	years	24	USEPA, 1997	7	USEPA, 1997	CDI (mg/kg-day) =
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	$\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	2,555	USEPA, 1989	
	CF1	Conversion Factor 1	L/cm^3	0.001	--	0.001	--	
	CF2	Conversion Factor 2	mg/μg	0.001	--	0.001	--	

TABLE J-5

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Soil/Sludge
Exposure Point: Lagoons (1 through 5) and Warehouse Area
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	200	USEPA, 1997	100	USEPA, 1997	$\frac{CS \times IR \times FI \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction Ingested	unitless	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	112	Prof. Judgement	56	Prof. Judgement	
	ED	Exposure Duration	years	6	USEPA, 1997	2	USEPA, 1997	
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16	CDI (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	2,900	USEPA, 2000	2,900	USEPA, 2000	$\frac{CS \times SA \times AF \times EF \times ED \times DAF \times CF}{BW \times AT}$
	AF	Skin Adherence Factor	mg/cm^2-day	0.3	USEPA, 2000	0.3	USEPA, 2000	
	EF	Exposure Frequency	days/year	112	Prof. Judgement	56	Prof. Judgement	
	ED	Exposure Duration	years	6	USEPA, 1997	2	USEPA, 1997	
	DAF	Dermal Absorption Factor	--	chemical specific	--	chemical specific	--	
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	

TABLE J-6

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Lagoons (1 through 5)
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Dermal	CW	Chemical Concentration in Water	μg/L	see Tables 3.11 to 3.14	see Tables 3.11 to 3.14	see Tables 3.11 to 3.14	see Tables 3.11 to 3.14	Organics:
	DA	Dose Absorbed per Unit Area per Event	mg/cm^2-event	see Attachment 4	USEPA, 1999a	see Attachment 4	USEPA, 1999a	Chronic Daily Intake (CDI) (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	2,900	USEPA, 2000	2,900	USEPA, 2000	
	PC	Permeability Constant	cm/hr	chemical specific	USEPA, 2000	chemical specific	USEPA, 2000	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$
	ET	Event Time	hrs/event	1	Prof. Judgement	0.5	Prof. Judgement	
	EV	Event Frequency	events/day	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	60	Prof. Judgement	30	Prof. Judgement	Inorganics:
	ED	Exposure Duration	years	6	USEPA, 1997	2	USEPA, 1997	CDI (mg/kg-day) =
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	$\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	
	CF1	Conversion Factor 1	L/cm^3	0.001	--	0.001	--	
	CF2	Conversion Factor 2	mg/μg	0.001	--	0.001	--	

TABLE J-7

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Soil/Sludge
Exposure Point: Lagoons (1 through 5)
Receptor Population: Commercial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	100	USEPA, 1997	50	USEPA, 1997	$\frac{CS \times IR \times FI \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction Ingested	unitless	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	250	USEPA, 2000	219	USEPA, 2000	
	ED	Exposure Duration	years	25	USEPA, 2000	9	USEPA, 2000	
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	USEPA, 1989	3,285	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	CDI (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	3,300	USEPA, 2000	3,300	USEPA, 2000	$\frac{CS \times SA \times AF \times EF \times ED \times DAF \times CF}{BW \times AT}$
	AF	Skin Adherence Factor	mg/cm^2-day	0.07	USEPA, 2000	0.07	USEPA, 2000	
	EF	Exposure Frequency	days/year	250	USEPA, 2000	219	USEPA, 2000	
	ED	Exposure Duration	years	25	USEPA, 2000	9	USEPA, 2000	
	DAF	Dermal Absorption Factor	--	chemical specific	--	chemical specific	--	
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	USEPA, 1989	3,285	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	

TABLE J-8

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Soil/Sludge
Exposure Point: Lagoons (1 through 5)
Receptor Population: Utility Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	200	USEPA, 1996	200	USEPA, 1996	$\frac{CS \times IR \times FI \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction Ingested	unitless	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	66	Prof. Judgement	22	Prof. Judgement	
	ED	Exposure Duration	years	1	Prof. Judgement	1	Prof. Judgement	
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	USEPA, 1989	365	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	CDI (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	3,300	USEPA, 2000	3,300	USEPA, 2000	$\frac{CS \times SA \times AF \times EF \times ED \times DAF \times CF}{BW \times AT}$
	AF	Skin Adherence Factor	mg/cm^2-day	0.2	USEPA, 2000	0.2	USEPA, 2000	
	EF	Exposure Frequency	days/year	66	Prof. Judgement	22	Prof. Judgement	
	ED	Exposure Duration	years	1	Prof. Judgement	1	Prof. Judgement	
	DAF	Dermal Absorption Factor	--	chemical specific	--	chemical specific	--	
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	USEPA, 1989	365	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	

TABLE J-9

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Soil/Groundwater
Exposure Medium: Air
Exposure Point: Lagoons (1 through 5)
Receptor Population: Utility Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	Modeled Concentration in Air	$\mu g/m^3$	see Table 3.50	see Table 3.50	see Table 3.50	see Table 3.50	
	ET	Exposure Time	hrs/day	8	Prof. Judgement	8	Prof. Judgement	Chronic Daily Intake (CDI) ($\mu g/m^3$) =
	EF	Exposure Frequency	days/year	66	Prof. Judgement	22	Prof. Judgement	
	ED	Exposure Duration	years	1	Prof. Judgement	1	Prof. Judgement	$\frac{CA \times ET \times EF \times ED}{CF \times AT}$
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	USEPA, 1989	365	USEPA, 1989	
	CF	Conversion Factor	hr/day	24	--	24	--	

TABLE J-10

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Lagoons (1 through 5)
Receptor Population: Utility Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Dermal	CW	Chemical Concentration in Water	μg/L	see Tables 3.11 to 3.14	see Tables 3.11 to 3.14	see Tables 3.11 to 3.14	see Tables 3.11 to 3.14	Organics:
	DA	Dose Absorbed per Unit Area per Event	mg/cm^2-event	see Attachment 4	USEPA, 1999a	see Attachment 4	USEPA, 1999a	Chronic Daily Intake (CDI) (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	3,300	USEPA, 2000	3,300	USEPA, 2000	
	PC	Permeability Constant	cm/hr	chemical specific	USEPA, 2000	chemical specific	USEPA, 2000	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$
	ET	Event Time	hrs/event	1	Prof. Judgement	0.5	Prof. Judgement	
	EV	Event Frequency	events/day	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	66	Prof. Judgement	22	Prof. Judgement	Inorganics:
	ED	Exposure Duration	years	1	Prof. Judgement	1	Prof. Judgement	CDI (mg/kg-day) =
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	$\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
	AT-N	Averaging Time (Non-Cancer)	days	365	USEPA, 1989	365	USEPA, 1989	
	CF1	Conversion Factor 1	L/cm^3	0.001	--	0.001	--	
	CF2	Conversion Factor 2	mg/μg	0.001	--	0.001	--	

TABLE J-11

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Soil
Exposure Point: Warehouse Area
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	see Table 3.16	see Table 3.16	see Table 3.16	see Table 3.16	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	100	USEPA, 1997	50	USEPA, 1997	$\frac{CS \times IR \times FI \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction Ingested	unitless	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	150	USEPA, 1994c	150	USEPA, 1994c	
	ED	Exposure Duration	years	24	USEPA, 1997	7	USEPA, 1997	
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	2,555	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	see Table 3.16	see Table 3.16	see Table 3.16	see Table 3.16	CDI (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	5,700	USEPA, 2000	5,700	USEPA, 2000	$\frac{CS \times SA \times AF \times EF \times ED \times DAF \times CF}{BW \times AT}$
	AF	Skin Adherence Factor	mg/cm^2-day	0.07	USEPA, 2000	0.07	USEPA, 2000	
	EF	Exposure Frequency	days/year	150	USEPA, 1994c	150	USEPA, 1994c	
	ED	Exposure Duration	years	24	USEPA, 1997	7	USEPA, 1997	
	DAF	Dermal Absorption Factor	--	chemical specific	--	chemical specific	--	
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	2,555	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	

TABLE J-12

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Soil
Exposure Point: Warehouse Area
Receptor Population: On-Site Resident
Receptor Age: Young Child (ages 1-6)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	see Table 3.16	see Table 3.16	see Table 3.16	see Table 3.16	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	200	USEPA, 1997	100	USEPA, 1997	$\frac{CS \times IR \times FI \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction Ingested	unitless	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	150	USEPA, 1994c	150	USEPA, 1994c	
	ED	Exposure Duration	years	6	USEPA, 1994c	2	USEPA, 1994c	
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	see Table 3.16	see Table 3.16	see Table 3.16	see Table 3.16	CDI (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	2,900	USEPA, 2000	2,900	USEPA, 2000	$\frac{CS \times SA \times AF \times EF \times ED \times DAF \times CF}{BW \times AT}$
	AF	Skin Adherence Factor	mg/cm^2-day	0.3	USEPA, 2000	0.3	USEPA, 2000	
	EF	Exposure Frequency	days/year	150	USEPA, 1994c	150	USEPA, 1994c	
	ED	Exposure Duration	years	6	USEPA, 1994c	2	USEPA, 1994c	
	DAF	Dermal Absorption Factor	--	chemical specific	--	chemical specific	--	
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	

TABLE J-13

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Current
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Hoosic River
Receptor Population: Recreational Visitor
Receptor Age: Adolescent (age 9-18)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	μg/L	see Tables 3.17	see Tables 3.17	see Tables 3.17	see Tables 3.17	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate of Water	mL/hr	50	USEPA, 1989	50	USEPA, 1989	$\frac{CW \times IR \times ET \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
	ET	Exposure Time	hrs/day	2.5	Prof. Judgement	0.5	Prof. Judgement	
	EF	Exposure Frequency	days/year	36	Prof. Judgement	24	Prof. Judgement	
	ED	Exposure Duration	years	10	USEPA, 1997	5	USEPA, 1997	
	BW	Body Weight	kg	45	USEPA, 1997	45	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA, 1989	1,825	USEPA, 1989	
	CF1	Conversion Factor 1	mg/μg	0.001	--	0.001	--	
	CF2	Conversion Factor 2	L/mL	0.001	--	0.001	--	
Dermal	CW	Chemical Concentration in Water	μg/L	see Tables 3.17	see Tables 3.17	see Tables 3.17	see Tables 3.17	Organics:
	DA	Dose Absorbed per Unit Area per Event	mg/cm^2-event	see Attachment 4	USEPA, 1999a	see Attachment 4	USEPA, 1999a	Chronic Daily Intake (CDI) (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	4,700	USEPA, 2000	4,700	USEPA, 2000	
	PC	Permeability Constant	cm/hr	chemical specific	USEPA, 2000	chemical specific	USEPA, 2000	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$
	ET	Event Time	hrs/event	2.5	Prof. Judgement	0.5	Prof. Judgement	
	EV	Event Frequency	event/day	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	36	Prof. Judgement	24	Prof. Judgement	Inorganics:
	ED	Exposure Duration	years	10	USEPA, 1997	5	USEPA, 1997	CDI (mg/kg-day) =
	BW	Body Weight	kg	45	USEPA, 1997	45	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	$\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA, 1989	1,825	USEPA, 1989	
	CF1	Conversion Factor 1	L/cm^3	0.001	--	0.001	--	
	CF2	Conversion Factor 2	mg/μg	0.001	--	0.001	--	

TABLE J-14

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Current
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Hoosic River
Receptor Population: Recreational Visitor
Receptor Age: Adolescent (ages 9-18)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Sediment	mg/kg	see Table 3.18	see Table 3.18	see Table 3.18	see Table 3.18	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate of Sediment	mg/day	100	USEPA, 1997	50	USEPA, 1997	$\frac{CS \times IR \times FI \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction Ingested	unitless	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	36	Prof. Judgement	24	Prof. Judgement	
	ED	Exposure Duration	years	10	USEPA, 1997	5	USEPA, 1997	
	BW	Body Weight	kg	45	USEPA, 1997	45	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA, 1989	1,825	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	see Table 3.18	see Table 3.18	see Table 3.18	see Table 3.18	CDI (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	4,700	USEPA, 2000	4,700	USEPA, 2000	$\frac{CS \times SA \times AF \times EF \times ED \times DAF \times CF}{BW \times AT}$
	AF	Skin Adherence Factor	mg/cm^2-day	0.23	USEPA, 2000	0.23	USEPA, 2000	
	EF	Exposure Frequency	days/year	36	Prof. Judgement	24	Prof. Judgement	
	ED	Exposure Duration	years	10	USEPA, 1997	5	USEPA, 1997	
	DAF	Dermal Absorption Factor	--	chemical specific	--	chemical specific	--	
	BW	Body Weight	kg	45	USEPA, 1997	45	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA, 1989	1,825	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	

TABLE J-15

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Hoosic River
Receptor Population: Park Visitor
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	µg/L	see Tables 3.17	see Tables 3.17	see Tables 3.17	see Tables 3.17	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate of Water	mL/hr	50	USEPA, 1989	50	USEPA, 1989	$\frac{CW \times IR \times ET \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
	ET	Exposure Time	hrs/day	2.5	Prof. Judgement	0.5	Prof. Judgement	
	EF	Exposure Frequency	days/year	60	Prof. Judgement	30	Prof. Judgement	
	ED	Exposure Duration	years	24	USEPA, 1997	7	USEPA, 1997	
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	2,555	USEPA, 1989	
	CF1	Conversion Factor 1	mg/µg	0.001	--	0.001	--	
	CF2	Conversion Factor 2	L/mL	0.001	--	0.001	--	
Dermal	CW	Chemical Concentration in Water	µg/L	see Tables 3.17	see Tables 3.17	see Tables 3.17	see Tables 3.17	Organics:
	DA	Dose Absorbed per Unit Area per Event	mg/cm^2-event	see Attachment 4	USEPA, 1999a	see Attachment 4	USEPA, 1999a	Chronic Daily Intake (CDI) (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	5,700	USEPA, 2000	5,700	USEPA, 2000	
	PC	Permeability Constant	cm/hr	chemical specific	USEPA, 2000	chemical specific	USEPA, 2000	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$
	ET	Event Time	hrs/event	2.5	Prof. Judgement	0.5	Prof. Judgement	
	EV	Event Frequency	event/day	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	60	Prof. Judgement	30	Prof. Judgement	Inorganics:
	ED	Exposure Duration	years	24	USEPA, 1997	7	USEPA, 1997	CDI (mg/kg-day) =
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	$\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	2,555	USEPA, 1989	
	CF1	Conversion Factor 1	L/cm^3	0.001	--	0.001	--	
	CF2	Conversion Factor 2	mg/µg	0.001	--	0.001	--	

TABLE J-16

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Hoosic River
Receptor Population: Park Visitor
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Sediment	mg/kg	see Table 3.18	see Table 3.18	see Table 3.18	see Table 3.18	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate of Sediment	mg/day	100	USEPA, 1997	50	USEPA, 1997	$\frac{CS \times IR \times FI \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction Ingested	unitless	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	60	Prof. Judgement	30	Prof. Judgement	
	ED	Exposure Duration	years	24	USEPA, 1997	7	USEPA, 1997	
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	2,555	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	see Table 3.18	see Table 3.18	see Table 3.18	see Table 3.18	CDI (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	5,700	USEPA, 2000	5,700	USEPA, 2000	$\frac{CS \times SA \times AF \times EF \times ED \times DAF \times CF}{BW \times AT}$
	AF	Skin Adherence Factor	mg/cm^2-day	0.07	USEPA, 2000	0.07	USEPA, 2000	
	EF	Exposure Frequency	days/year	60	Prof. Judgement	30	Prof. Judgement	
	ED	Exposure Duration	years	24	USEPA, 1997	7	USEPA, 1997	
	DAF	Dermal Absorption Factor	--	chemical specific	--	chemical specific	--	
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	2,555	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	

TABLE J-17

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Hoosic River
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	μg/L	see Tables 3.17	see Tables 3.17	see Tables 3.17	see Tables 3.17	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate of Water	mL/hr	50	USEPA, 1989	50	USEPA, 1989	$\frac{CW \times IR \times ET \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
	ET	Exposure Time	hrs/day	2.5	Prof. Judgement	0.5	Prof. Judgement	
	EF	Exposure Frequency	days/year	60	Prof. Judgement	30	Prof. Judgement	
	ED	Exposure Duration	years	6	USEPA, 1997	2	USEPA, 1997	
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	
	CF1	Conversion Factor 1	mg/μg	0.001	--	0.001	--	
	CF2	Conversion Factor 2	L/mL	0.001	--	0.001	--	
Dermal	CW	Chemical Concentration in Water	μg/L	see Tables 3.17	see Tables 3.17	see Tables 3.17	see Tables 3.17	Organics:
	DA	Dose Absorbed per Unit Area per Event	mg/cm^2-event	see Attachment 4	USEPA, 1999a	see Attachment 4	USEPA, 1999a	Chronic Daily Intake (CDI) (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	2,900	USEPA, 2000	2,900	USEPA, 2000	
	PC	Permeability Constant	cm/hr	chemical specific	USEPA, 2000	chemical specific	USEPA, 2000	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$
	ET	Event Time	hrs/event	2.5	Prof. Judgement	0.5	Prof. Judgement	
	EV	Event Frequency	event/day	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	60	Prof. Judgement	30	Prof. Judgement	Inorganics:
	ED	Exposure Duration	years	6	USEPA, 1997	2	USEPA, 1997	CDI (mg/kg-day) =
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	$\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	
	CF1	Conversion Factor 1	L/cm^3	0.001	--	0.001	--	
	CF2	Conversion Factor 2	mg/μg	0.001	--	0.001	--	

TABLE J-18

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Hoosic River
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Sediment	mg/kg	see Table 3.18	see Table 3.18	see Table 3.18	see Table 3.18	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate of Sediment	mg/day	200	USEPA, 1997	100	USEPA, 1997	$\frac{CS \times IR \times FI \times EF \times ED \times CF}{BW \times AT}$
	FI	Fraction Ingested	unitless	1	Prof. Judgement	1	Prof. Judgement	
	EF	Exposure Frequency	days/year	60	Prof. Judgement	30	Prof. Judgement	
	ED	Exposure Duration	years	6	USEPA, 1997	2	USEPA, 1997	
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	
Dermal	CS	Chemical Concentration in Soil	mg/kg	see Table 3.18	see Table 3.18	see Table 3.18	see Table 3.18	CDI (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm^2	2,900	USEPA, 2000	2,900	USEPA, 2000	$\frac{CS \times SA \times AF \times EF \times ED \times DAF \times CF}{BW \times AT}$
	AF	Skin Adherence Factor	mg/cm^2-day	0.3	USEPA, 2000	0.3	USEPA, 2000	
	EF	Exposure Frequency	days/year	60	Prof. Judgement	30	Prof. Judgement	
	ED	Exposure Duration	years	6	USEPA, 1997	2	USEPA, 1997	
	DAF	Dermal Absorption Factor	--	chemical specific	--	chemical specific	--	
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	
	CF	Conversion Factor	kg/mg	0.000001	--	0.000001	--	

TABLE J-19

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Current
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Tap Water (Residential Wells)
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration In Water	µg/L	see Tables 3.19 to 3.26	see Tables 3.19 to 3.26	see Tables 3.19 to 3.26	see Tables 3.19 to 3.26	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR-W	Ingestion Rate of Water	liters/day	2	USEPA, 1994c	1.4	USEPA, 1994c	$\frac{CW \times IR \times EF \times ED \times CF1}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	USEPA, 1994c	350	USEPA, 1994c	
	ED	Exposure Duration	years	24	USEPA, 1997	7	USEPA, 1997	
	CF1	Conversion Factor 1	mg/µg	0.001	--	0.001	--	
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	2,555	USEPA, 1989	

TABLE J-20

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Current
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Tap Water (Residential Wells)
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	μg/L	see Tables 3.19 to 3.26	see Tables 3.19 to 3.26	see Tables 3.19 to 3.26	see Tables 3.19 to 3.26	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR-W	Ingestion Rate of Water	liters/day	1.5	USEPA, 1997	0.87	USEPA, 1997	$\frac{CW \times IR \times EF \times ED \times CF1}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	USEPA, 1994c	350	USEPA, 1994c	
	ED	Exposure Duration	years	6	USEPA, 1994c	2	USEPA, 1994c	
	CF1	Conversion Factor 1	mg/μg	0.001	--	0.001	--	
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	

TABLE J-21

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: On-Site/Off-Site Wells
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	µg/L	see Tables 3.27 to 3.49	see Tables 3.27 to 3.49	see Tables 3.27 to 3.49	see Tables 3.27 to 3.49	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR-W	Ingestion Rate of Water	liters/day	2	USEPA, 1994c	1.4	USEPA, 1994c	$\frac{CW \times IR \times EF \times ED \times CF1}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	USEPA, 1994c	350	USEPA, 1994c	
	ED	Exposure Duration	years	24	USEPA, 1997	7	USEPA, 1997	
	CF1	Conversion Factor 1	mg/µg	0.001	--	0.001	--	
	BW	Body Weight	kg	70	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	2,555	USEPA, 1989	

TABLE J-22

VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: On-Site/Off-Site Wells
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	µg/L	see Tables 3.27 to 3.49	see Tables 3.27 to 3.49	see Tables 3.27 to 3.49	see Tables 3.27 to 3.49	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR-W	Ingestion Rate of Water	liters/day	1.5	USEPA, 1997	0.87	USEPA, 1997	$\frac{CW \times IR \times EF \times ED \times CF1}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	USEPA, 1994c	350	USEPA, 1994c	
	ED	Exposure Duration	years	6	USEPA, 1994c	2	USEPA, 1994c	
	CF1	Conversion Factor 1	mg/µg	0.001	--	0.001	--	
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	

TABLE J-23
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
POWNAL TANNERY

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (MM/DD/YY)
1,2-Dichlorobenzene	Chronic	9E-02	mg/kg-day	(4)	9E-02	mg/kg-day	NOAEL	1000	IRIS	02/01/01
1,2-Dichloroethane	Chronic	3E-02	mg/kg-day	(4)	3E-02	mg/kg-day	N/A	N/A	NCEA	05/98
1,3-Dichlorobenzene	Chronic	9E-04	mg/kg-day	(4)	9E-04	mg/kg-day	N/A	N/A	NCEA	05/98
1,4-Dichlorobenzene	Chronic	3E-02	mg/kg-day	(4)	3E-02	mg/kg-day	N/A	N/A	NCEA	05/98
Benzene	Chronic	3E-03	mg/kg-day	(4)	3E-03	mg/kg-day	N/A	N/A	NCEA	05/98
Bromodichloromethane	Chronic	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Kidney	1000	IRIS	02/01/01
Carbon tetrachloride	Chronic	7E-04	mg/kg-day	(4)	7E-04	mg/kg-day	Liver	1000	IRIS	02/01/01
Chlorobenzene	Chronic	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Liver	1000	IRIS	02/01/01
Chloroform	Chronic	1E-02	mg/kg-day	(4)	1E-02	mg/kg-day	Liver	1000	IRIS	02/01/01
Methyl tert-butyl ether	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methylene Chloride	Chronic	6E-02	mg/kg-day	(4)	6E-02	mg/kg-day	Liver	100	IRIS	02/01/01
Tetrachloroethylene	Chronic	1E-02	mg/kg-day	(4)	1E-02	mg/kg-day	Liver	1000	IRIS	02/01/01
Trichloroethene	Chronic	6E-03	mg/kg-day	(4)	6E-03	mg/kg-day	N/A	N/A	NCEA	05/98
Xylene (total)	Chronic	2E+00	mg/kg-day	(4)	2E+00	mg/kg-day	Nervous System	100	IRIS	02/01/01
2-Methylnaphthalene [3]	Chronic	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Body Weight	3000	IRIS	02/01/01
4-Methylphenol	Chronic	5E-03	mg/kg-day	(4)	5E-03	mg/kg-day	Nervous System	1000	HEAST	1997
Acetophenone	Chronic	1E-01	mg/kg-day	(4)	1E-01	mg/kg-day	NOAEL	3000	IRIS	02/01/01
Atrazine	Chronic	4E-02	mg/kg-day	(4)	4E-02	mg/kg-day	Whole body	100	IRIS	02/01/01
Benzo(a)anthracene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
bis(2-Chloroethoxy)methane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bis(2-chloroethyl)ether	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bis(2-ethylhexyl)phthalate	Chronic	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Liver	1000	IRIS	02/01/01
Carbazole	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N-Nitroso-di-n-propylamine	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Naphthalene	N/A	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Body Weight	3000	IRIS	02/01/01
Nitrobenzene	Chronic	5E-04	mg/kg-day	(4)	5E-04	mg/kg-day	Blood	10000	IRIS	02/01/01
Pentachlorophenol	Chronic	3E-02	mg/kg-day	(4)	3E-02	mg/kg-day	Kidney	100	IRIS	02/01/01
Phenanthrene [3]	N/A	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Body Weight	3000	IRIS	02/01/01

TABLE J-23
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
POWNAL TANNERY

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (MM/DD/YY)
4,4'-DDE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aldrin	Chronic	3E-05	mg/kg-day	(4)	3E-05	mg/kg-day	Liver	1000	IRIS	02/01/01
alpha-BHC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1242 (3)	Chronic	2E-05	mg/kg-day	(4)	2E-05	mg/kg-day	Immune System	300	IRIS	02/01/01
Aroclor 1248 (3)	Chronic	2E-05	mg/kg-day	(4)	2E-05	mg/kg-day	Immune System	300	IRIS	02/01/01
Aroclor 1254	Chronic	2E-05	mg/kg-day	(4)	2E-05	mg/kg-day	Immune System	300	IRIS	02/01/01
Aroclor 1260 (3)	Chronic	2E-05	mg/kg-day	(4)	2E-05	mg/kg-day	Immune System	300	IRIS	02/01/01
beta-BHC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
delta-BHC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin	Chronic	5E-05	mg/kg-day	(4)	5E-05	mg/kg-day	Liver	100	IRIS	02/01/01
Heptachlor	Chronic	5E-04	mg/kg-day	(4)	5E-04	mg/kg-day	Liver	300	IRIS	02/01/01
Heptachlor epoxide	Chronic	1E-05	mg/kg-day	(4)	1E-05	mg/kg-day	Liver	1000	IRIS	02/01/01
PCB TEQ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dioxin TEQ	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Antimony	Chronic	4E-04	mg/kg-day	0.15	6E-05	mg/kg-day	Blood	1000	IRIS	02/01/01
Arsenic	Chronic	3E-04	mg/kg-day	(4)	3E-04	mg/kg-day	Skin	3	IRIS	02/01/01
Barium	Chronic	7E-02	mg/kg-day	0.07	5E-03	mg/kg-day	NOAEL	3	IRIS	02/01/01
Cadmium (food)	Chronic	1E-03	mg/kg-day	0.01	1E-05	mg/kg-day	Kidney	10	IRIS	02/01/01
Chromium (3)	Chronic	2E+00	mg/kg-day	0.013	2.0E-02	mg/kg-day	NOAEL	1000	IRIS	02/01/01
Chromium VI	Chronic	3E-03	mg/kg-day	0.013	3.9E-05	mg/kg-day	NOAEL	300	IRIS	02/01/01
Cyanide, free	Chronic	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Nervous System	500	IRIS	02/01/01
Manganese (soils) (3)	Chronic	7E-02	mg/kg-day	0.04	2.8E-03	mg/kg-day	Nervous System	1	IRIS	02/01/01
Manganese (water) (3)	Chronic	2E-02	mg/kg-day	0.04	9.6E-04	mg/kg-day	Nervous System	1	IRIS	02/01/01
Mercury (inorganic - water)	Chronic	3E-04	mg/kg-day	0.07	2.1E-05	mg/kg-day	Immune System	1000	IRIS	02/01/01
Mercury (organic - soils) (3)	Chronic	1E-04	mg/kg-day	(4)	1E-04	mg/kg-day	Nervous System	10	IRIS	02/01/01
Thallium (3)	Chronic	8E-05	mg/kg-day	(4)	8E-05	mg/kg-day	NOAEL	3000	IRIS	02/01/01
Vanadium	Chronic	9E-03	mg/kg-day	0.026	2.3E-04	mg/kg-day	NOAEL	100	IRIS	02/01/01

TABLE J-23
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
POWNAL TANNERY

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (MM/DD/YY)

(1) Antimony oral absorption efficiency from ATSDR, 1997.
Barium oral absorption efficiency from ATSDR, 1997.
Cadmium oral absorption efficiency from McLellan et al., 1978.
Chromium oral absorption efficiency from Donaldson and Barreras, 1996.
Manganese oral absorption efficiency from Davidsson et al., 1989.
Mercury oral absorption efficiency from USEPA, 2000.
Vanadium oral absorption efficiency from Conklin et al., 1982.

IRIS = Integrated Risk Information System
HEAST = Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
N/A = Not Applicable
NOAEL = No Observable Adverse Effect Level

(2) Calculated as: (oral RfD) x (oral to dermal adjustment factor).

(3) RfD for Aroclor 1254 used as a surrogate for Aroclor 1242, Aroclor 1248, and Aroclor 1260.
RfDs for managanese are based on total allowable intake (10 mg/day) minus the background intake (5 mg/day). The remaining intake (5 mg/day) is divided by 70 kg.
RfD for naphthalene used as a surrogate for phenanthrene and 2-methylnaphthalene.

RfD for chromium is based on Chromium III.
RfD for thallium is based on thallium sulfate.
RfD for mercury (organic), based on methylmercury.

(4) Oral absorption efficiency exceeds 50%. Therefore, no adjustment of the oral reference dose is necessary.

(5) Permeability constants (Kp) used for surface water absorption calculations: 1E-03 cm/hr for arsenic, manganese, mercury, thallium, and vanadium; 2E-03 cm/hr for chromium; 1.4 cm/hr for PCB TEQ and dioxin TEQ (USEPA, 1999a); for organics, see attachment 4.

TABLE J-24
NON-CANCER TOXICITY DATA -- INHALATION

POWNAL TANNERY

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (MM/DD/YY)
1,2-Dichlorobenzene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichloroethane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dichlorobenzene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	Chronic	8E+02	ug/m^3	-	-	Liver	100	IRIS	02/01/01
Benzene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bromodichloromethane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbon tetrachloride	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorobenzene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chloroform	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methylene chloride	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tetrachloroethylene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Trichloroethene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Xylene (total)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

IRIS = Integrated Risk Information System

N/A = Not Applicable; Inhalation not evaluated as a pathway of concern.

TABLE J-25
CANCER TOXICITY DATA -- ORAL/DERMAL
POWNAL TANNERY

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (2)	Units	Weight of Evidence Category	Source	Date (MM/DD/YY)
1,2-Dichlorobenzene	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
1,2-Dichloroethane	9.1E-02	(1)	9.1E-02	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
1,3-Dichlorobenzene	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
1,4-Dichlorobenzene	2.4E-02	(1)	2.4E-02	(mg/kg-day) $^{-1}$	B2	HEAST	1997
Benzene	5.5E-02	(1)	5.5E-02	(mg/kg-day) $^{-1}$	A	IRIS	02/01/01
Bromodichloromethane	6.2E-02	(1)	6.2E-02	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Carbon tetrachloride	1.3E-01	(1)	1.3E-01	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Chlorobenzene	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Chloroform	6.1E-03	(1)	6.1E-03	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Methyl tert-butyl ether	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methylene chloride	7.5E-03	(1)	7.5E-03	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Tetrachloroethylene	5.2E-02	(1)	5.2E-02	(mg/kg-day) $^{-1}$	B2	NCEA	05/98
Trichloroethene	1.1E-02	(1)	1.1E-02	(mg/kg-day) $^{-1}$	B2	NCEA	05/98
Xylene (total)	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
2-Methylnaphthalene	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
4-Methylphenol	N/A	N/A	N/A	N/A	C	IRIS	02/01/01
Acetophenone	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Atrazine	2.2E-01	(1)	2.2E-01	(mg/kg-day) $^{-1}$	C	HEAST	1997
Benzo(a)anthracene	7.3E-01	(1)	7.3E-01	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Benzo(a)pyrene	7.3E+00	(1)	7.3E+00	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Benzo(b)fluoranthene	7.3E-01	(1)	7.3E-01	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Benzo(k)fluoranthene	7.3E-02	(1)	7.3E-02	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
bis(2-Chloroethoxy)methane	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Bis(2-chloroethyl)ether	1.1E+00	(1)	1.1E+00	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Bis(2-ethylhexyl)phthalate	1.4E-02	(1)	1.4E-02	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Carbazole	2.0E-02	(1)	2.0E-02	(mg/kg-day) $^{-1}$	B2	HEAST	1997
Dibenz(a,h)anthracene	7.3E+00	(1)	7.3E+00	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Indeno(1,2,3-cd)pyrene	7.3E-01	(1)	7.3E-01	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
N-Nitroso-di-n-propylamine	7.0E+00	(1)	7.0E+00	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Naphthalene	N/A	N/A	N/A	N/A	C	IRIS	02/01/01
Nitrobenzene	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Pentachlorophenol	1.2E-01	(1)	1.2E-01	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Phenanthrene	N/A	N/A	N/A	N/A	D	IRIS	02/01/01

TABLE J-25
CANCER TOXICITY DATA -- ORAL/DERMAL
POWNAL TANNERY

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (2)	Units	Weight of Evidence Category	Source	Date (MM/DD/YY)
4,4'-DDE	3.4E-01	(1)	3.4E-01	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Aldrin	1.7E+01	(1)	1.7E+01	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
alpha-BHC	6.3E+00	(1)	6.3E+00	(mg/kg-day) $^{-1}$	C	IRIS	02/01/01
Aroclor 1242	2.0E+00	(1)	2.0E+00	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Aroclor 1248	2.0E+00	(1)	2.0E+00	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Aroclor 1254	2.0E+00	(1)	2.0E+00	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Aroclor 1260	2.0E+00	(1)	2.0E+00	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
beta-BHC	1.8E+00	(1)	1.8E+00	(mg/kg-day) $^{-1}$	C	IRIS	02/01/01
delta-BHC	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Dieldrin	1.6E+01	(1)	1.6E+01	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Heptachlor	4.5E+00	(1)	4.5E+00	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
Heptachlor epoxide	9.1E+00	(1)	9.1E+00	(mg/kg-day) $^{-1}$	B2	IRIS	02/01/01
PCB TEQ	1.5E+05	(1)	1.5E+05	(mg/kg-day) $^{-1}$	B2	HEAST	1997
Dioxin TEQ	1.5E+05	(1)	1.5E+05	(mg/kg-day) $^{-1}$	B2	HEAST	1997
Antimony	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Arsenic	1.5E+00	(1)	1.5E+00	(mg/kg-day) $^{-1}$	A	IRIS	02/01/01
Barium	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Cadmium	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Chromium	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Chromium VI	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Cyanide, free	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Manganese (soils)	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Manganese (water)	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Mercury (inorganic - water)	N/A	N/A	N/A	N/A	C	IRIS	02/01/01
Mercury (organic - soils)	N/A	N/A	N/A	N/A	C	IRIS	02/01/01
Thallium	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Vanadium	N/A	N/A	N/A	N/A	D	IRIS	02/01/01

TABLE J-25
CANCER TOXICITY DATA -- ORAL/DERMAL
POWNAL TANNERY

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (2)	Units	Weight of Evidence Category	Source	Date (MM/DD/YY)

IRIS = Integrated Risk Information System
HEAST = Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
RME = Reasonable Maximum Exposure
CT = Central Tendency
N/A = Not Applicable

Slope factor for benzo(a)pyrene, along with the appropriate relative potency factor (USEPA, 1993), used for the other carcinogenic PAHs.

Weight of evidence for mercury (organic), based on methylmercury.

(1) Oral absorption efficiency exceeds 50%. Therefore, no adjustment of the oral slope factor is necessary.

(2) Calculated as: (oral slope factor) / (oral to dermal adjustment factor)

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen (by the oral route)

E - Evidence of noncarcinogenicity

TABLE J-26
CANCER TOXICITY DATA -- INHALATION

POWNAL TANNERY

Chemical of Potential Concern	Unit Risk	Units	Adjustment	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (MM/DD/YY)
1,2-Dichlorobenzene	N/A	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
1,2-Dichloroethane	2.6E-05	$ug/m^{3\ -1}$	-	-	-	B2	IRIS	02/01/01
1,3-Dichlorobenzene	N/A	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
1,4-Dichlorobenzene	N/A	N/A	N/A	N/A	N/A	C	HEAST	1997
Benzene	7.8E-06	$ug/m^{3\ -1}$	-	-	-	A	IRIS	02/01/01
Bromodichloromethane	N/A	N/A	N/A	N/A	N/A	B2	IRIS	02/01/01
Carbon tetrachloride	1.5E-05	$ug/m^{3\ -1}$	-	-	-	B2	IRIS	02/01/01
Chlorobenzene	N/A	N/A	N/A	N/A	N/A	D	IRIS	02/01/01
Chloroform	2.3E-05	$ug/m^{3\ -1}$	-	-	-	B2	IRIS	02/01/01
Methylene chloride	4.7E-07	$ug/m^{3\ -1}$	-	-	-	B2	IRIS	02/01/01
Tetrachloroethylene	9.5E-07	$ug/m^{3\ -1}$	-	-	-	B2	NCEA	5/98
Trichloroethene	1.7E-06	$ug/m^{3\ -1}$	-	-	-	B2	NCEA	5/98
Xylene (total)	N/A	N/A	N/A	N/A	N/A	D	IRIS	02/01/01

IRIS = Integrated Risk Information System

HEAST = Health Effects Assessment Summary Tables

NCEA = National Center for Environmental Assessment

N/A = Not Applicable; Inhalation not evaluated as a pathway of concern.

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen (by the oral route)

E - Evidence of noncarcinogenicity

TABLE J-27

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Current
Receptor Population: Trespasser
Receptor Age: Adolescent (Ages 9-18)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 5						Chromium	NOAEL	2E+00	--	--	2E+00
								(total)		2E+00	--	--	2E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				2E+00

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-28
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 1	Benzo(a)anthracene	7E-07	--	4E-07	1E-06						
			Benzo(a)pyrene	7E-06	--	4E-06	1E-05						
			Pentachlorophenol	2E-06	--	2E-06	4E-06						
			Dioxin TEQ	9E-04	--	1E-04	1E-03						
			Arsenic	6E-06	--	8E-07	7E-06						
								Chromium	NOAEL	4E+01	--	--	4E+01
								Mercury	Nervous System	3E+00	--	--	3E+00
			(total)	9E-04	--	1E-04	1E-03	(total)		5E+01	--	--	5E+01
			Total Risk Across All Media and All Exposure Routes				1E-03	Total Hazard Index Across All Media and All Exposure Routes					5E+01

Total Skin HI =	N/A
Total Nervous System HI =	3E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-29
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 1						Chromium	NOAEL	1E+01	--	--	1E+01
								(total)		1E+01	--	--	1E+01
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				1E+01

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-30

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 3	Dioxin TEQ	2E-04	--	2E-05	2E-04						
			Arsenic	6E-06	--	8E-07	7E-06						
								Chromium	NOAEL	2E+01	--	--	2E+01
			(total)	2E-04	--	3E-05	2E-04	(total)		2E+01	--	--	2E+01
			Total Risk Across All Media and All Exposure Routes				2E-04	Total Hazard Index Across All Media and All Exposure Routes					2E+01

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-31
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 3						Chromium	NOAEL	2E+00	--	--	2E+00
								(total)		2E+00	--	--	2E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				2E+00

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-32

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 5	Benzo(a)pyrene	1E-06	--	6E-07	2E-06						
			N-Nitroso-di-n-propylamine	2E-06	--	--	2E-06						
			Dioxin TEQ	1E-04	--	2E-05	2E-04						
			Arsenic	4E-06	--	5E-07	4E-06						
								Chromium	NOAEL	1E+01	--	--	1E+01
			(total)	2E-04	--	2E-05	2E-04	(total)		1E+01	--	--	1E+01
			Total Risk Across All Media and All Exposure Routes				2E-04	Total Hazard Index Across All Media and All Exposure Routes					1E+01

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-33
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 5						Chromium	NOAEL	3E+00	--	--	3E+00
								(total)		3E+00	--	--	3E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				3E+00

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-34
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Hoosic River	PCB TEQ	2E-04	--	3E-05	2E-04						
			Dioxin TEQ	3E-06	--	4E-07	3E-06						
			Arsenic	2E-06	--	3E-07	2E-06						
			(total)	2E-04	--	3E-05	2E-04						
			Total Risk Across All Media and All Exposure Routes				2E-04	Total Hazard Index Across All Media and All Exposure Routes					N/A

TABLE J-35
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water - Residential Well - RW-003						Arsenic	Skin	2E+00	--	--	2E+00
								(total)		2E+00	--	--	2E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				2E+00

Total Skin HI =	2E+00
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-36
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water - Residential Well - RW-006						Thallium	NOAEL	2E+00	--	--	2E+00
								(total)		2E+00	--	--	2E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				2E+00

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-37

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water - Residential Well - RW-008						Arsenic	Skin	1E+00	--	--	1E+00
								Manganese	Nervous System	2E+00	--	--	2E+00
								(total)		3E+00	--	--	3E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				3E+00

Total Skin HI =	1E+00
Total Nervous System HI =	2E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-38
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary .Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water - Residential Well - RW-010						Manganese	Nervous System	3E+00	--	--	3E+00
								(total)		3E+00	--	--	3E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				3E+00

Total Skin HI =	N/A
Total Nervous System HI =	3E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-39
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water - Residential Well - RW-010						Manganese	Nervous System	2E+00	--	--	2E+00
								(total)		2E+00	--	--	2E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				2E+00

Total Skin HI =	N/A
Total Nervous System HI =	2E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-40

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-104U						Manganese	Nervous System	4E+00	--	--	4E+00
								(total)		4E+00	--	--	4E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				4E+00

Total Skin HI =	N/A
Total Nervous System HI =	4E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-41
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-104U						Manganese	Nervous System	2E+00	--	--	2E+00
								(total)		2E+00	--	--	2E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				2E+00

Total Skin HI =	N/A
Total Nervous System HI =	2E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-42

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-106U						Manganese	Nervous System	2E+00	--	--	2E+00
								(total)		2E+00	--	--	2E+00
			Total Risk Across All Media and All Exposure Routes				N/A	Total Hazard Index Across All Media and All Exposure Routes					2E+00

Total Skin HI =	N/A
Total Nervous System HI =	2E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-43
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-107R	Dioxin TEQ	9E-06	--	--	9E-06						
			Arsenic	2E-04	--	--	2E-04	Arsenic	Skin	3E+00	--	--	3E+00
								Manganese	Nervous System	6E+00	--	--	6E+00
			(total)	2E-04	--	--	2E-04	(total)		9E+00	--	--	9E+00
			Total Risk Across All Media and All Exposure Routes				2E-04		Total Hazard Index Across All Media and All Exposure Routes				9E+00

Total Skin HI =	3E+00
Total Nervous System HI =	6E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-44
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-107R						Arsenic	Skin	1E+00	--	--	1E+00
								Manganese	Nervous System	3E+00	--	--	3E+00
								(total)		4E+00	--	--	4E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				4E+00

Total Skin HI =	1E+00
Total Nervous System HI =	3E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-45
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-107U						Arsenic	Skin	1E+00	--	--	1E+00
								Manganese	Nervous System	1E+01	--	--	1E+01
								(total)		2E+01	--	--	2E+01
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				2E+01

Total Skin HI =	1E+00
Total Nervous System HI =	1E+01
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-46
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-107U						Manganese	Nervous System	6E+00	--	--	6E+00
								(total)		6E+00	--	--	6E+00
			Total Risk Across All Media and All Exposure Routes				N/A	Total Hazard Index Across All Media and All Exposure Routes					6E+00

Total Skin HI =	N/A
Total Nervous System HI =	6E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-47

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-109U	Carbon tetrachloride	2E-06	--	--	2E-06						
			Heptachlor epoxide	2E-06	--	--	2E-06						
			Arsenic	6E-04	--	--	6E-04	Arsenic	Skin	7E+00	--	--	7E+00
								Manganese	Nervous System	2E+01	--	--	2E+01
								Thallium	NOAEL	9E+00	--	--	9E+00
			(total)	6E-04	--	--	6E-04	(total)		3E+01	--	--	3E+01
			Total Risk Across All Media and All Exposure Routes				6E-04	Total Hazard Index Across All Media and All Exposure Routes					3E+01

Total Skin HI =	7E+00
Total Nervous System HI =	2E+01
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-48
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-109U						Arsenic	Skin	3E+00	--	--	3E+00
								Manganese	Nervous System	9E+00	--	--	9E+00
								Thallium	NOAEL	2E+00	--	--	2E+00
								(total)		1E+01	--	--	1E+01
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				1E+01

Total Skin HI =	3E+00
Total Nervous System HI =	9E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-49

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-110R						Arsenic	Skin	2E+00	--	--	2E+00
								Manganese	Nervous System	7E+00	--	--	7E+00
								(total)		9E+00	--	--	9E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				9E+00

Total Skin HI =	2E+00
Total Nervous System HI =	7E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-50
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-110R						Manganese	Nervous System	4E+00	--	--	4E+00
								(total)		4E+00	--	--	4E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				4E+00

Total Skin HI =	N/A
Total Nervous System HI =	4E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-51
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-110U						Manganese	Nervous System	6E+00	- -	- -	6E+00
								(total)		6E+00	- -	- -	6E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				6E+00

Total Skin HI =	N/A
Total Nervous System HI =	6E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-52
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-110U						Manganese	Nervous System	2E+00	--	--	2E+00
								(total)		2E+00	--	--	2E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				2E+00

Total Skin HI =	N/A
Total Nervous System HI =	2E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-53
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-111U						Manganese	Nervous System	3E+00	--	--	3E+00
								(total)		3E+00	--	--	3E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				3E+00

Total Skin HI =	N/A
Total Nervous System HI =	3E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-54

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-113R	Arsenic	2E-03	--	--	2E-03	Arsenic	Skin	2E+01	--	--	2E+01
								Manganese	Nervous System	5E+00	--	--	5E+00
			(total)	2E-03	--	--	2E-03	(total)		2E+01	--	--	2E+01
						Total Risk Across All Media and All Exposure Routes	2E-03					Total Hazard Index Across All Media and All Exposure Routes	2E+01

Total Skin HI =	2E+01
Total Nervous System HI =	5E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-55
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-113R	Arsenic	3E-04	--	--	3E-04	Arsenic	Skin	1E+01	--	--	1E+01
								Manganese	Nervous System	3E+00	--	--	3E+00
			(total)	3E-04	--	--	3E-04	(total)		1E+01	--	--	1E+01
						Total Risk Across All Media and All Exposure Routes	3E-04					Total Hazard Index Across All Media and All Exposure Routes	1E+01

Total Skin HI =	1E+01
Total Nervous System HI =	3E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-56

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-114U						Manganese	Nervous System	4E+01	--	--	4E+01
								(total)		4E+01	--	--	4E+01
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				4E+01

Total Skin HI =	N/A
Total Nervous System HI =	4E+01
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-57

RISK ASSESSMENT SUMMARY

CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-114U						Manganese	Nervous System	2E+01	--	--	2E+01
								(total)		2E+01	--	--	2E+01
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				2E+01

Total Skin HI =	N/A
Total Nervous System HI =	2E+01
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-58

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-B-7	Methylene chloride	3E-03	--	--	3E-03	Methylene chloride	Liver	3E+01	--	--	3E+01
			(total)	3E-03	--	--	3E-03	(total)		3E+01	--	--	3E+01
			Total Risk Across All Media and All Exposure Routes				3E-03	Total Hazard Index Across All Media and All Exposure Routes					3E+01

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	3E+01

TABLE J-59
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-B-7	Methylene chloride	2E-04	--	--	2E-04	Methylene chloride	Liver	6E+00	--	--	6E+00
			(total)	2E-04	--	--	2E-04	(total)		6E+00	--	--	6E+00
Total Risk Across All Media and All Exposure Routes							2E-04	Total Hazard Index Across All Media and All Exposure Routes					6E+00

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	6E+00

TABLE J-60

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-L-3	Arsenic	5E-04	--	--	5E-04	Arsenic	Skin	6E+00	--	--	6E+00
								Manganese	Nervous System	4E+01	--	--	4E+01
			(total)	5E-04	--	--	5E-04	(total)		4E+01	--	--	4E+01
						Total Risk Across All Media and All Exposure Routes	5E-04					Total Hazard Index Across All Media and All Exposure Routes	4E+01

Total Skin HI =	6E+00
Total Nervous System HI =	4E+01
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-61

RISK ASSESSMENT SUMMARY

CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-L-3						Arsenic	Skin	2E+00	- -	- -	2E+00
								Manganese	Nervous System	2E+01	- -	- -	2E+01
								(total)		2E+01	- -	- -	2E+01
Total Risk Across All Media and All Exposure Routes							N/A	Total Hazard Index Across All Media and All Exposure Routes					2E+01

Total Skin HI =	2E+00
Total Nervous System HI =	2E+01
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-62

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-L-10						Manganese	Nervous System	1E+01	--	--	1E+01
								(total)		1E+01	--	--	1E+01
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				1E+01

Total Skin HI =	N/A
Total Nervous System HI =	1E+01
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-63
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	On-Site Monitoring Well MW-L-10						Manganese	Nervous System	4E+00	--	--	4E+00
								(total)		4E+00	--	--	4E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				4E+00

Total Skin HI =	N/A
Total Nervous System HI =	4E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-64

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	All On-Site Monitoring Wells	1,4-Dichlorobenzene	3E-06	--	--	3E-06						
			Carbon tetrachloride	2E-06	--	--	2E-06						
			Methylene chloride	3E-03	--	--	3E-03	Methylene chloride	Liver	3E+01	--	--	3E+01
			Tetrachloroethylene	7E-05	--	--	7E-05						
			Atrazine	3E-05	--	--	3E-05						
			Pentachlorophenol	2E-06	--	--	2E-06						
			Heptachlor epoxide	2E-06	--	--	2E-06						
			Dioxin TEQ	9E-06	--	--	9E-06						
			Arsenic	2E-03	--	--	2E-03	Arsenic	Skin	2E+01	--	--	2E+01
								Manganese	Nervous System	4E+01	--	--	4E+01
								Thallium	NOAEL	9E+00	--	--	9E+00
			(total)	4E-03	--	--	4E-03	(total)		1E+02	--	--	1E+02
			Total Risk Across All Media and All Exposure Routes				4E-03	Total Hazard Index Across All Media and All Exposure Routes					1E+02

Total Skin HI =	2E+01
Total Nervous System HI =	4E+01
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	3E+01

TABLE J-65
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	All On-Site Monitoring Wells						Manganese	Nervous System	3E+00	--	--	3E+00
								(total)		3E+00	--	--	3E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				3E+00

Total Skin HI =	N/A
Total Nervous System HI =	3E+00
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-66

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 1	Benzo(a)pyrene	5E-06	--	2E-06	7E-06						
			Pentachlorophenol	1E-06	--	7E-07	2E-06						
			Dioxin TEQ	6E-04	--	4E-05	6E-04						
			Arsenic	4E-06	--	3E-07	5E-06						
								Chromium	NOAEL	1E+01	--	--	1E+01
			(total)	6E-04	--	4E-05	7E-04	(total)		1E+01	--	--	1E+01
			Total Risk Across All Media and All Exposure Routes				7E-04	Total Hazard Index Across All Media and All Exposure Routes					1E+01

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-67
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 1						Chromium	NOAEL	4E+00	--	--	4E+00
								(total)		4E+00	--	--	4E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				4E+00

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-68

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 3						Chromium	NOAEL	6E+00	--	--	6E+00
								(total)		6E+00	--	--	6E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				6E+00

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-69

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 5						Chromium	NOAEL	3E+00	--	--	3E+00
								(total)		3E+00	--	--	3E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				3E+00

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-70

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 1						Chromium	NOAEL	5E+00	--	--	5E+00
								(total)		5E+00	--	--	5E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				5E+00

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-71

RISK ASSESSMENT SUMMARY

CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 1						Chromium	NOAEL	2E+00	- -	- -	2E+00
								(total)		2E+00	- -	- -	2E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				2E+00

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A

TABLE J-72

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future
Receptor Population: Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk Young Child + Adult				Chemical	Non-Carcinogenic Hazard Quotient Young Child				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 3						Chromium	NOAEL	3E+00	--	--	3E+00
								(total)		3E+00	--	--	3E+00
			Total Risk Across All Media and All Exposure Routes				N/A		Total Hazard Index Across All Media and All Exposure Routes				3E+00

Total Skin HI =	N/A
Total Nervous System HI =	N/A
Total Immune System HI =	N/A
Total Kidney HI =	N/A
Total Blood HI =	N/A
Total Growth HI =	N/A
Total Liver HI =	N/A